



Review Article

A STUDY OF CLINICAL CONDITION'S RELATED TO VITIATED *ASTHI DHATU***Gaurav Soni^{1*}, Neelam²**¹P.G. Scholar, P.G. Department of Sharir Rachana, National Institute of Ayurveda, Jaipur, Rajasthan, India.²Junior Resident, Department of Dravyaguna, Faculty of Ayurveda, IMS, BHU, Varanasi, India.**Article info****Article History:**

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ABSTRACT

Ancient seers of *Ayurveda* have classified the elements of the body under three fundamental components- *Dosha*, *Dhatu* and *Mala*. These three entities are responsible for the maintenance of structural and functional integrity of the body. Among these basic elements, *Dhatus* are especially meant for *Dharana* & *Poshana* of *Sharira*. The equilibrium state of these *Dhatus* results in *Arogya*, where as any imbalance in it produces *Vikara*.

The *Asthi* is known as kernel of whole body as it provides structural shape and support. In the physical body, *Asthi Dhatu* is formed as *Posaka* (unstable) *Medas Dhatu* flows into the *Purisha Dhara Kala* and is digested by the *Asthiagni*. In addition to the formation of the bones of the body, teeth are formed through this process and are thus the *Upadhatu* (secondary tissue). The waste products (*Malas*) of this metabolic process are the hair and nails.

As *Dhatu* get vitiated by various *Doshas* so, is the *Asthi Dhatu* e.g. *Asthi Pradosaj Vikara*, *Asthi Ksaya* etc. *Asthi* also undergoes traumatic, musculo-skeletal injuries resulting in *Bhagna*. Thus, the *Asthi* undergoes both pathological and traumatic deformity. From the ancient time *Asthi* is elaborated on the basis of clinical importance. Various clinical conditions are scattered in *Samhita* related to *Asthi Dhatu* and its *Upadhatu* with their treatment, which are needed to be collected to provide a glimpse of extensive knowledge of *Ayurveda* on this specialty.

INTRODUCTION

Ancient seers of *Ayurveda* have classified the elements of the body under three fundamental components- *Dosha*, *Dhatu* and *Mala*. These three entities are responsible for the maintenance of structural and functional integrity of the body. Among these basic elements *Dhatus* are especially meant for *Dharana* & *Poshana* of *Sharira*.

The *Asthi* is known as kernel of whole body as it provides structural shape and support. As the toy is made up of straws and threads and pasted with the wet clay from outside, similarly *Snayu* (ligaments) are tied with *Asthi* (bones) in body. Ligaments are covered by *Mansa* (muscles) which are nourished continuously by the *Dhamani* and *Sira* (vessels) and then whole body is covered by *Twacha* (skin). This indicates that *Asthi* is meant for playing anchor role of frame work of body and is supported effectively by *Snayu*, *Mansa*, *Dhamni* and *Sira*.^[1]

Asthi pathologies can be simple or complex. *Vata* vitiation leads to weak or fragile bones that

become osteoporotic and fracture easily. *Pitta* vitiation leads to bone infections (osteomyelitis) and inflammation. *Kapha* vitiation leads to excessively thick, dense bones. Other diseases of the bones are more complicated. Osteoarthritis is a combined *Vata-Kapha* condition in which *Vata* (age, motion and stress) is responsible for provoking growth in an irregular fashion leading to bone spurs. Rheumatoid arthritis is a *Sannipatika* condition whereby *Vata* pushes *Kapha* to cause irregular bone growth. *Vata* increases effect of *Pitta* causing inflammation and bone destruction. *Ama* is also present. Osteoblastic bone cancer is a *Sannipatika* condition whereby *Vata* simultaneously pushes *Kapha* (bone growth) and increases effect of *Agni* within the affected tissue creating a high metabolic state for growth. Osteoclastic bone cancer has a dual *Dosha* pathology whereby *Vata* combines with *Pitta* resulting in a high metabolic state that destroys bone tissue.

Traumatic deformities also exists with these pathologies which needs separate mention due to its broad description in classical texts, so here mainly pathologies other than traumatic origin are only considered.

EVALUATING THE ASTHI DHATU

As you cannot assess the health of the *Asthi Dhātu* directly except through medical testing, it is necessary to assess the *Asthi Dhātu* via the *Upadhatus* and *Malas* of its production. Thus, by examining the hair, nails and teeth the practitioner can infer the state of the *Asthi Dhātu*.

When the *Asthi Dhātu* is deficient, hair density becomes scant. Hair loss may be distributed throughout the scalp or in patches. In addition, palpation of the nails reveals that they have become thin and break easily. The teeth will appear crooked or become darker (gray) than usual. These findings are consistent with deficiency due to *Vata* vitiation.

When the *Asthi Dhātu* is in excess, hair density is fuller. In addition, the nails are thick and the teeth large, straight and white. These are the signs of *Kapha* vitiation within the *Asthi Dhātu*. However, these findings are more difficult to discern than deficiency as a person with a *Kapha Prakruti* will also exhibit these same findings. Thus, secondary signs of *Kapha* vitiation should also be observed most especially those within the digestive system such as sluggish digestion and the mind such as stubbornness. When these findings are present in addition to dense hair, thick nails and white teeth it can be assumed that *Kapha* has entered the *Asthi Dhātu*.

When *Pitta* has entered the *Asthi Dhātu*, the teeth and nails will become a pale shade of yellow and the hair will lose its color and turn gray. Over time, the nails will become weaker and the hair may fall out as deficiency sets in due to burn out.

IMPORTANCE OF DHATU PRADOSHAJA VIKARAS

Dalhana mentioned the reason behind explaining the *Dhatu Pradosaja Vikara* separately, these are-

1. *Chikitsa Vishesa Vijnanartha*
2. *Sukhasadhyatvadi Karma Bodhartham*

Knowledge of these two is very much essential for a *Vaidya*, to avoid failure in practice. *Chakrapani* distinctly revealed that in some cases only *Dosha Viparita Chikitsa* will not bring complete relief to the patient. One should treat *Dhatu* also because of *Ashraya Prabhava*^[2]. *Chakrapani* has used the term "*Ashraya Prabhava*" to indicate the significance of *Dhatu* in the treatment.

ASTHI PRADOSHAJA VIKARAS

The *Asthi Pradoshaja Vikaras* which are mentioned in different classics are tabulated below.

Table 1: Showing the different *Asthi Pradoshaja Vikaras*

S.No.	Vyadhi	C.S. ^[3]	S.S. ^[4]
1.	<i>Adhyasthi</i>	+	+
2.	<i>Adhidanta</i>	+	+
3.	<i>Dantabheda</i>	+	-
4.	<i>Dantashoola</i>	+	-
5.	<i>Asthibheda</i>	+	-
6.	<i>Asthischoola</i>	+	+
7.	<i>Vivarnata</i>	+	-
8.	<i>Kesa, Loma, Nakha, Smashru Dosha</i>	+	-
9.	<i>Kunakha</i>	-	+
10.	<i>Asthi toda</i>	-	+

Yogendranath Sen in commentary of *Charaka Samhita* mentioned that *Kesha, Loma* and *Smashru* are *Malas* of the *Asthi Dhātu*. This is the reason to consider *Keshadi Doshas* as one among the *Asthi Pradoshaja Vikaras*.

NIDANAS (PATHOLOGICAL CAUSES) FOR ASTHI PRADOSHAJA VIKARAS

The *Nidanas* of *Asthi Pradoshaja Vikaras* can be classified into *Samanya* and *Vishesa Nidana*. These are as follows.

Samanya Nidana^[5]

In *Charaka Samhita* and *Astanga Hrudaya*, *Samanya Nidanas* are mentioned for all the *Dhatu Pradoshaja Vikaras*. These are;

1. *Dosha guna Sama Ahara* and *Vihara*
2. *Dhatu Viguna Ahara* and *Vihara*
3. *Ritu Viguna Ahara* and *Vihara*

Dosha Guna Sama Ahara and Vihara:

The intake of *Nidanas* in the form of *Ahara* and *Vihara* which are having similar *Gunas* to that of particular *Dosha Gunas* leads to *Dosha Vruddhi* by *Samanyam Vruddhikaranam Siddhanta*. eg: if person consumes *Rukshadi Guna Yukta Ahara* and *Vihara* then there will be *Vata Vruddhi*.

Dhatu Viguna Ahara and Vihara: The intake of *Nidanas* in the form of *Ahara* and *Vihara* which are having dissimilar *Gunas* to that of particular *Dhatu Gunas* i.e *Dhatu Virodhaka Swabhava* by *Vishesa Siddhanta*.

Ritu Viguna Ahara and Vihara: The particular *Ahara* and *Vihara* which are dealt for each *Ritu* if not followed leads to *Dosha* vitiation i.e. *Vipareeta* to *Ritucharya Palana*.

Vishesa Nidana^[6]

In *Charaka Samhita* some specific *Nidanas* are mentioned for *Asthi Pradoshaja Vikaras* like.

- A. *Ativyayama*
- B. *Atisankshobha*
- C. *Ativighattana*
- D. *Vatala Ahara* and *Vihara*^[7]

Ativyayama: Ativyayama means excessive Sharira Ayasa Janaka Karma.

Atisankshobha: Atisankshobha means Abhighata (Yogindranath Sen). It means injury or excessive jerk or violence or commotion.

Ativighattana: Ativighattana means Atichaalana (Yogindranath Sen). It means excessive movements or separated or loosened or shaking.

Vatala Ahara and Vihara Sevana: Vata Guna Samana Ahara and Vihara Sevana.

Vatala Ahara: Ruksha – Sheeta- Laghu Guna Pradhana Ahara Sevana, Alpa Matra Ahara Sevana, Mudga, Masoora, Vaartaaka, Kalinga, Harenuka etc.

Vatala Vihara: Ativyavaya, Ati Jagarana, Krodha, Bhaya, Vegadharana, Abhighata, Upavasa, Shoka, Plavana etc.

SAMPRAPTI (Pathogenesis)

The Nidanas of the Asthi Pradoshaja Vikara are Ativyayama, Atisankshobha, Ativighattana and Vatala Ahara- Vihara which leads to Agni Dushti and is the cause of production of abnormal Asthi. In such conditions if the patient continues the intake of causative factors (Nidana Sevana), there will be excessive vitiation of Doshas as they have been already vitiated earlier. These excessive vitiated Doshas when lodges in Asthi Dhatu, the manifestation of Asthi Pradoshaja Vikara takes place at various sites in the body according to Sthana Dusti or Khavaigunya.

POORVARUPA [8]

None of the Ayurvedic classics have mentioned Poorvarupa of Asthi Pradoshaja Vikaras. Avyakta Lakshanas or Alpa Vyakta Lakshanas are considered as Poorvarupa.

RUPA (Symptoms)

Each Asthi Pradoshaja Vikara is having its own Lakshana. These are as follows.

1. **Adhyasthi** [9] [10] - Adyasthi means Adhika Asthi i.e., additional bone or extra bone.

Adhidanta [11]- Adhidanta means Adhika Danta i.e., additional tooth or extra tooth.

Dosha: Vata

Characteristic features: There will be an extra tooth eruption over the tooth and during the eruption pain associates and after the eruption pain subsides. This condition is called Adhidanta.

2. **Dantabheda** [11]-It is a condition where cutting type of pain in Danta is seen and is called as Dantabheda. It is also called as 'Bhanjanaka' [13].

Dosha: Vata (Vagbhata)

Vata + Kapha (Susruta)

Characteristic features: It is a Vataja Vyadhi and there will be Toda, Bheda, Ruk and Sphutana in the Danta.

This is known as Dantabheda. It is a Kapha- Vataja Vyadhi in which teeth falls down due to Mukha Vaktrata and associated with Teevra Ruja. This is known as Bhanjanaka.

3. **Dantashoola** [14] [15]- There will be a severe or acute pain in the tooth is called as Dantashoola.

Other names: Dalhana (Susruta)

Sheetadanta (Vagbhata)

Dosha: Vata

Characteristic features: The vitiated Vata Dosha causes intolerable cutting type of pain in the teeth and is called Dalana [16]. Ashtanga Hrudaya also opines same, but called it as Sheeta Danta because the patient is not able to eat or drink Sheeta Padarthas.

4. **Asthibheda** [17]: It is a condition in which Bhidhyamanasya Vyatha (cutting type or splitting type of pain) will be present in Asthi. This is known as Asthibheda.

5. **Asthishoola:** It is a condition in which severe or acute pain in Asthi like Shanka Sphutanavat. This is known as Asthishoola.

6. **Asthitoda** [18]: It is a condition in which Vicchinna Shoola (pricking or breaking type of pain) will be present in Asthi. This is known as Asthitoda.

7. **Vivarnata:** These disorders are two in number. They are Shyavadanta and Krimidanta [19].

8. **Shyavadanta** [20]: The blackish discoloration of tooth is called as Shyavadanta.

Dosha: Rakta + Pitta (Susruta)

Rakta + Pitta + Vata (Vagbhata)

Characteristic features: The vitiated Rakta along with Pitta, burns the Danta Twacha and causes the Shyavata (blackish) or Neela (blue) Varnata of Danta. This is known as Shyavadanta. The Danta becomes Shyava Varna due to the vitiation of Rakta, Pitta and Vata is known as Shyavadanta.

9. **Krimidanta** [21] [22]- The condition in which decay of tooth takes place is called as Krimidanta.

Dosha: Vata

Characteristic features: Due to the vitiation of Vata Dosha, Danta becomes Krishna Varna, Chidra Yukta, Chalayukta, Sravayukta, Teevra Rujayukta or sometime intermittent Shoola. This is known as Krimi Danta. Ashtanga Hrudaya explained Krimidanta in a more elaborate manner, which is as follows.

Vata vitiation- Danta Moola Shotha

Danta Kshata-Sushira

Danta Majja Shosha- production of Krimi

Danta Shoola, Srava- Chala Danta

Puya Rakta Srava- Danta Vidradi

10. **Kesha, Loma and Smashru Vikaras-** The Kesha, Loma and Smasru Vikaras are Indralupta, Ruhya, Khalitya and Palitya.

11. Indralupta^{[23] [24]} The partial or complete loss of hair from all over the body is called as *Indralupta*.

Synonyms: *Ruhya, Chacha*

Dosha: *Tridosha + Rakta*

Characteristic features: The vitiated *Vata* and *Pitta* affects the *Roma Kupas* and causes *Roma Patana*, then the vitiated *Kapha* and *Rakta* obstructs the *Roma Kupas*. So there is no chance for re-growth of hairs. This condition is called as *Indralupta*. *Ashtanga Hrudaya* also opines same. *Karteeka* opines that if hair loss is from all over the body is called as *Ruhya* and fall of *Smashru* is known as *Indralupta*.

12. Khalitya^{[25] [26]} The condition in which gradual loss of hair takes place in the scalp is called as *Khalitya*.

Dosha: *Tridosha (Charaka)*

Tridosha + Rakta (Susruta & Vagbhata)

Characteristic features: The vitiated *Vatadi Doshas* along with increased *Sharira Ushnata* removes the *Snigdha* in *Kesha Moolas* leading to gradual hair loss is called as *Khalitya*.

The vitiated *Vata* and *Pitta* affects the *Roma Kupas* and causes *Roma Patana*, then the vitiated *Kapha* and *Rakta* obstructs the *Roma Kupas*. So there is no chance for re-growth of hairs. The complete loss of scalp hair is called *Khalitya*. The pathology of *Khalitya* is like *Indralupta* i.e., *Vata* and *Pitta* causes *Kesha Shatana*, *Kapha* and *Rakta* obstructs the *Kesha Moolas* so there is no chance of re growth of hair but in *Khalitya* *Kesha Shatan* is gradual or slow, not sudden as in *Indralupta*.

13. Palitya^[27, 28] This is condition in which discoloration of hair takes place is called as *Palitya*.

Dosha: *Tridosha (Charaka)*

Pitta (Susruta & Vagbhata)

Characteristic features: The vitiated *Vatadi Doshas* and increased *Sharira Ushnata* removes the *Snigdhata* in *Kesha Moolas* causing discoloration of hair, it becomes *Kapila Varna*. Due to *Krodha*, *Shoka* and *Shrama* the increased *Shaeera Ushnata* and vitiated *Pitta* causes *Pachana* or discoloration of *Keshas* in the *Shiras* which is called as *Palitya*.

Ashtanga Hrudaya also opines same as *Susruta Samhita* and mentions some other *Lakshanas* depending upon predominance of *Doshas*.

- In *Vata* predominance, hair becomes *Shyava Varna*, *Ruksha*, *Khara* and *Jalaprabha*.
- In *Pitta* predominance, hair becomes *Peetabha* with *Daha*.
- In *Kapha* predominance, hair becomes *Snigdayukta*, *Shukla Varna* and *Sthula*.
- In *Tridosha* vitiation all the above symptoms together present.

14. Kunakha^{[29] [30] [31]} – Disease of the nail in which they are ugly in appearance. This condition is called as *Kunakha*.

Synonyms: *Kuleena (Susruta)*

Dosha: *Pitta + Vata*

Characteristic features: The vitiated *Pitta* and *Vata* localizes at the sides of the nail beds producing *Daha*, *Paka* and *Vedana* and is called as *Chippa*^[32]. When this condition is in mild form, it is known as *Kunkha* and *Nakha* attains *Rukshatva*, *Kharatva* and *Asita Varna*. Other causes for *Kunakha* include *Abhighata*. *Ashtanga Hrudaya* also opines same and added one more *Lakshana* i.e. *Jwara*.

Many other systemic skeletal defects are caused by *Beej Dosha* or by combination of *Beej Dosha*, *Antah Sravi Srotodushti* (hormonal defects), *Poshan Janya* and other *Vikari* factor like.

Asthi Kshaya

Asthi Kshaya (decrease in bone tissue) is a condition explained in *Ayurveda*, under the headline of *Ashtadasha Kshayas*. In *Asthi Kshaya* there is diminution of *Asthi Dhatu*. Similar to this, there is a condition known as Osteoporosis in western medicine which means 'Porous bones' or "the brittleness of the bones due to increased porosity from loss of mineral substance", causing decrease in the bone tissue & leading to increased risk of fractures. According to the principles of *Aashrayaashrayee Bhava*, *Asthi Dhatu* is the seat of *Vata Dosha* and *Asthi & Vata* are inversely proportional to each other regarding increase and decrease. Increase of *Vata* leads to decrease of *Asthi*.

Dalhana explains *Kshaya* as *Swapramaanahaani*. Decreased either quantitative/qualitative is *Kshaya*. *Asthi Kshaya* is decrease in *Asthi Dhatu*. This is denoted by either *Asthi Kshaya* or *Asthi Soushirya*.

Asthi Kshaya can be compared to osteoporosis (Decrease in bone mineral density). *Asthi Soushirya* is mentioned as symptom of *Majja Kshaya*.

Asthi Vriddhi

Abnormal growth of bones and teeth are signs of *Asthivridhi*. These conditions can be equated with Hyperostosis, Osteopetrosis (any degree of skeletal fragility increases the risk of fracture), Calcaneal spur, Diaphyseal Aclasis and Fluirosis.^[33]

Phakka Roga^[34] If an infant is unable to walk at the age of one year, condition is known as *Phakka Roga*. Clinical features of this disease are similar to features of Rickets. In this condition calcification of cartilage fails and ossification of the growth zone is disturbed. Rickets affect the growing bones and therefore the disease develops during the period of most rapid growth of skeleton, i.e. first 3 months to 3 years of age. Osteoid tissue forms normally and the cartilage cells proliferate freely, but mineralization does not take

place properly. This result in craniotabes, rachitic rotary at the costochondral junctions, Harrison's sulcus at the diaphragmatic attachments, enlarged epiphyses in limp bones and pelvic deformities are other common pathological conditions.

***Asthi Viddhradhi (Osteomyelitis)*^[35]**

In *Asthi Viddhradhi*, severe suppuration of *Asthivaha* and *Mansavaha Srotas* takes place. If there is any suppuration in bone, muscles and does not find exit, the patient suffers from burning sensation and destroys the bone tissue giving feeling of presence of foreign body. Due to surgical interventions the pus oozes out. Later on due to cracking of bone fat like, unctuous, white, cold and profuse amount of pus is discharged. This condition of *Asthi* is very painful condition similar to osteomyelitis.

CONCLUSION

Clinical importance of *Asthi Sharir* not only just comprises of traumatic deformities but a vast description of diseases on basis of *Doshic* predominance as seen scattered in classical texts. This review article shows the various pathological conditions of *Asthi*. Due to *Vikara* in *Dhatu* its *Updhatu* and *Mala* also gets *Vikrita* leading to various *Vyadhi's* which we have already seen under *Asthi Pradoshja Vikara*. Classical texts not just gives sign and symptoms of disease but also gave treatment in local and systemic form. Now we can say that *Asthi Vikara* not just confined to traumatic injuries but various conditions of *Asthi Vikara* proves the depth of knowledge about both *Asthi Dhatu* and its clinical importance; thus providing a glimpse of extensive knowledge of *Ayurveda* on this specialty.

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